Technical Bulletin #2

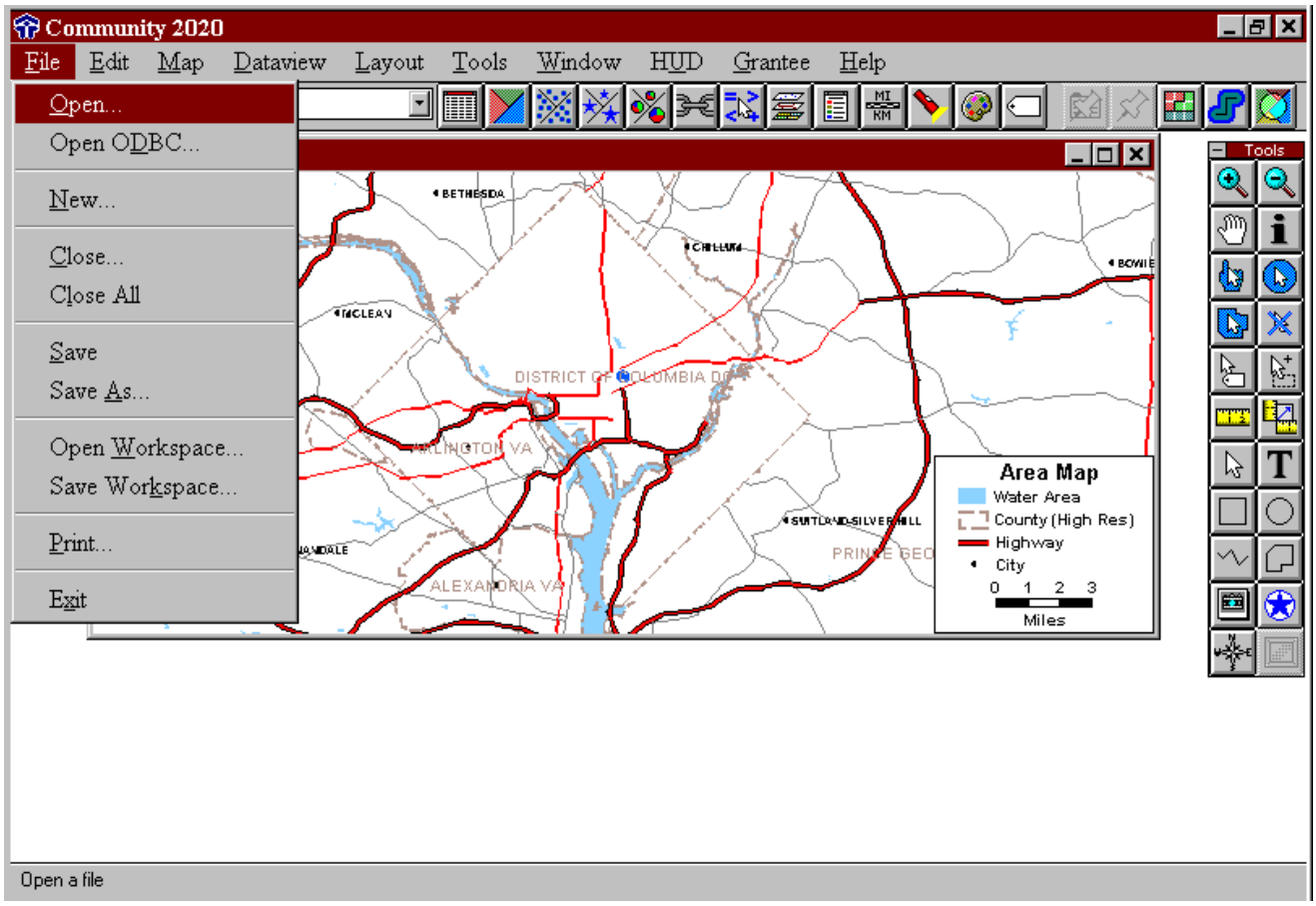
Importing ESRI ArcView Shape Files into Community 2020 software

Community 2020 software is an open system which will accept many geographic, database, and graphic file formats. One of those geographic file format types is the primary file type for the Environmental Systems Research Institute's "shape" file format for its ArcView GIS software. The Shape file, or "shp," file type is analogous to the standard geographic file, or "dbd," file type in Community 2020 software. Shape files are used to build thematic maps just as you would begin to create thematic maps in Community 2020 software by using the "dbd" or "cdf" geographic files. Community 2020 is designed to import and convert Shape files into Caliper's Standard Geographic Files for further use with all the other features of Community 2020. Community 2020 can export its "layers" into ArcView Shape Files, but that is a lesson for another technical bulletin.

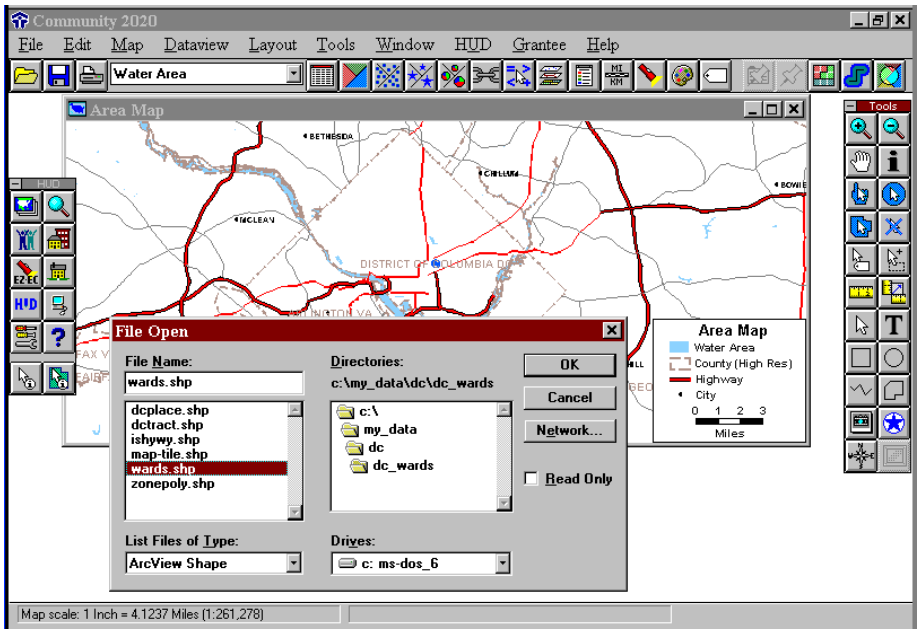
You can use Shape files to create a geographic area or use Shape Files to add a layer of information that is not contained on the CD of the Community 2020 data. This is especially good for using local data. For example, local political wards, local agency service areas, zoning designations, or any point, line, or area data, which exists in a Shape File format, can be imported into Community 2020.

In Community 2020 software, you can begin either by going to File, then Open or (once you have a map open) going to "Add Layer." The following example is based on the first approach. This allows you to create a "dbd" layer for Community 2020, which you can easily add as a layer later. This is NOT as simple as opening any other file. The following example shows how to create a layer of local political wards, and add it to a map of Washington, DC.

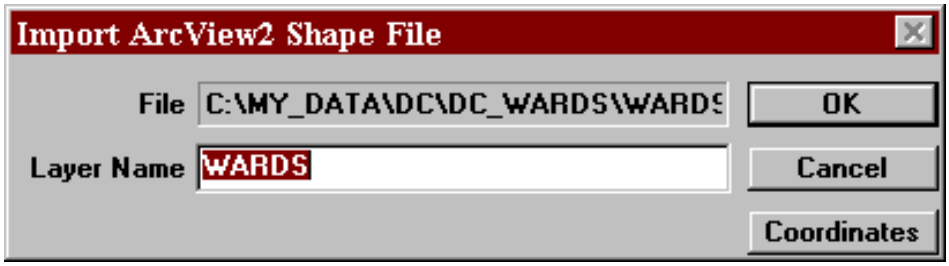
If for examle, you want a map of local city council or ward boundaries, obtain such a file from a local reliable source such as the local municipal planning office, the planning commission, zoning board, or university GIS program. The following screens show how to begin. Go to File, then Open.



You will then need to scroll down the list of file types until you see ArcView Shape Files. Chose ArcView Shape Files, and find the directory and name of the file where you have stored the file you obtained. In this case, it is “wards.shp.” See the screen below.

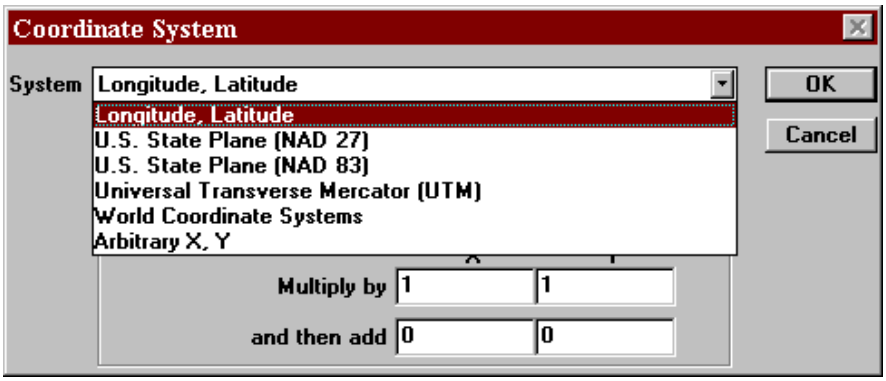


You are getting closer, but it is not as simple as opening up a file. Next you will see a very important dialogue box. As seen below.



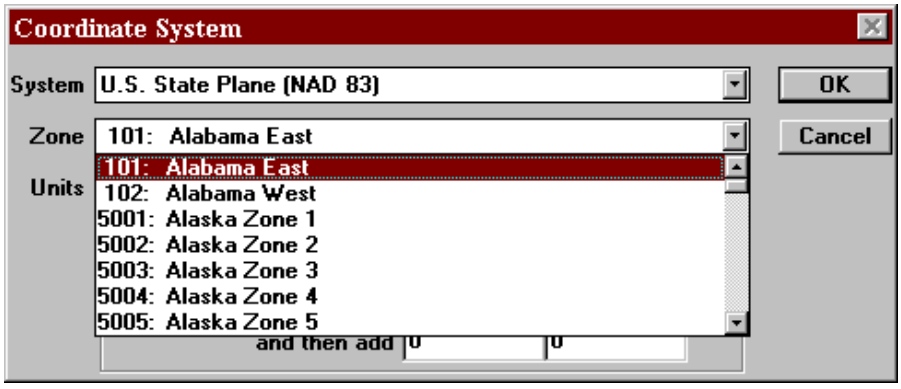
This dialogue box contains a button "Coordinates." In order for your Community 2020 layers to match with the geography of the Shape File, all layers must follow the same coordinate system. Coordinate systems and projections are discussed in the Maptitude manual. See Chapters 15 and 17 of the Maptitude User's Guide, which comes with your box of Commuity 2020 software. This means that the map units, the geographic coordinates, and the projection of the layers must match. This requires some explanation, but a complete description will not appear here.

Next click on the Coordinates button, and you will see the following dialogue box in which you need to choose the coordinate system used to create the Shape File you obtained.



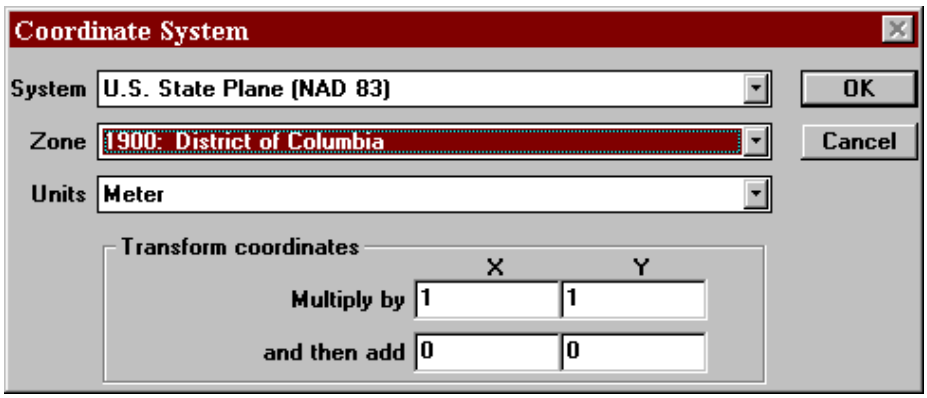
You will notice that there are many coordinate systems for measuring geography. Longitude and latitude is the default coordinate system for Mapititude. If you know that the Shape file you have created or obtained is based on longitude and latitude, you probably will not need to go through the steps of coordinating the units of map measure (meters or feet), State Plane Coordinates, or projections.

If your Shape file is not based on longitude and latitude, you should consider the following very basic information. Primarily, you need to know about two widely used coordinate systems, (1) longitude and latitude and (2) State Plane coordinates. Among State Plane Coordinates there are two standards: North American Datum (NAD) 27 (1927) and 83 (1983). The State Plane Coordinate system for 1983 is more accurate, but not all files you encounter may be based on the more recent standard. There are also one or more State Plane Coordinate systems for each State. As you see below, once you choose a coordinate system, you need to know the State's system that was used originally.



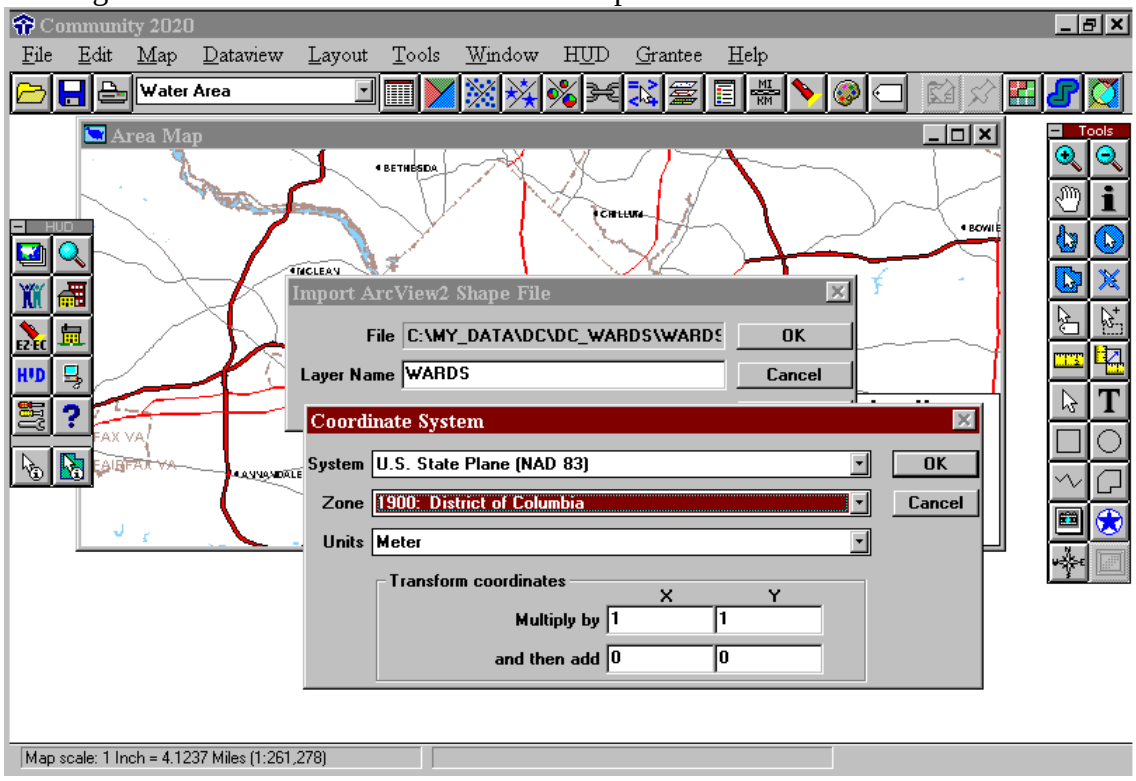
In the case of the District of Columbia political ward Shape Files, I had to ask the local government staff, who produced the files, what coordinate system was used. Even though Community 2020 will generate a geographic file, without specifying the coordinate system, the boundaries will not match and other features may be in the incorrect

locations. I discovered that the original Shape file was created according to the NAD 83 standard for the District of Columbia.

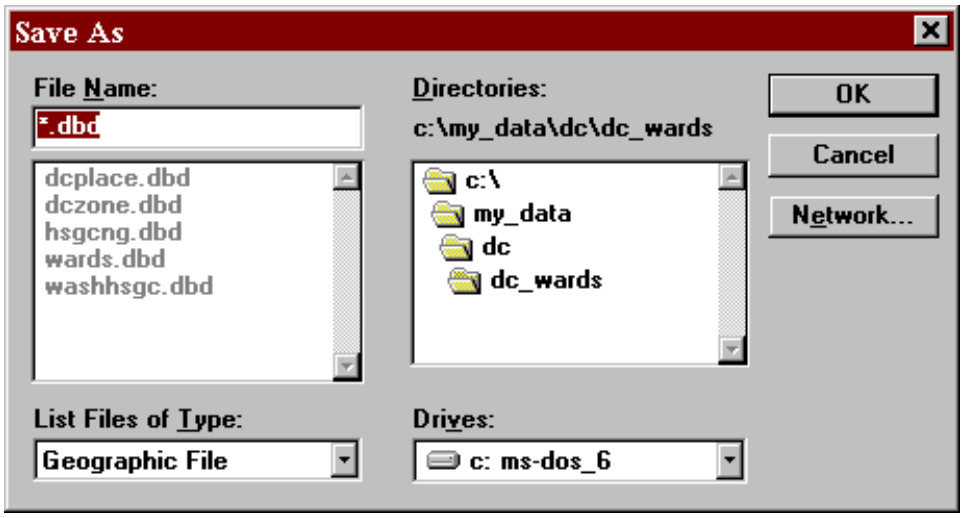


In addition, the standard is based on meters as the unit of map measure; not feet. The default setting in Community 2020 software is for "Autoprojections" so that one does not need to know all about projections and coordinate systems. In Community 2020 software and in ArcView, you can adjust these features for different thematic and scientific affects.

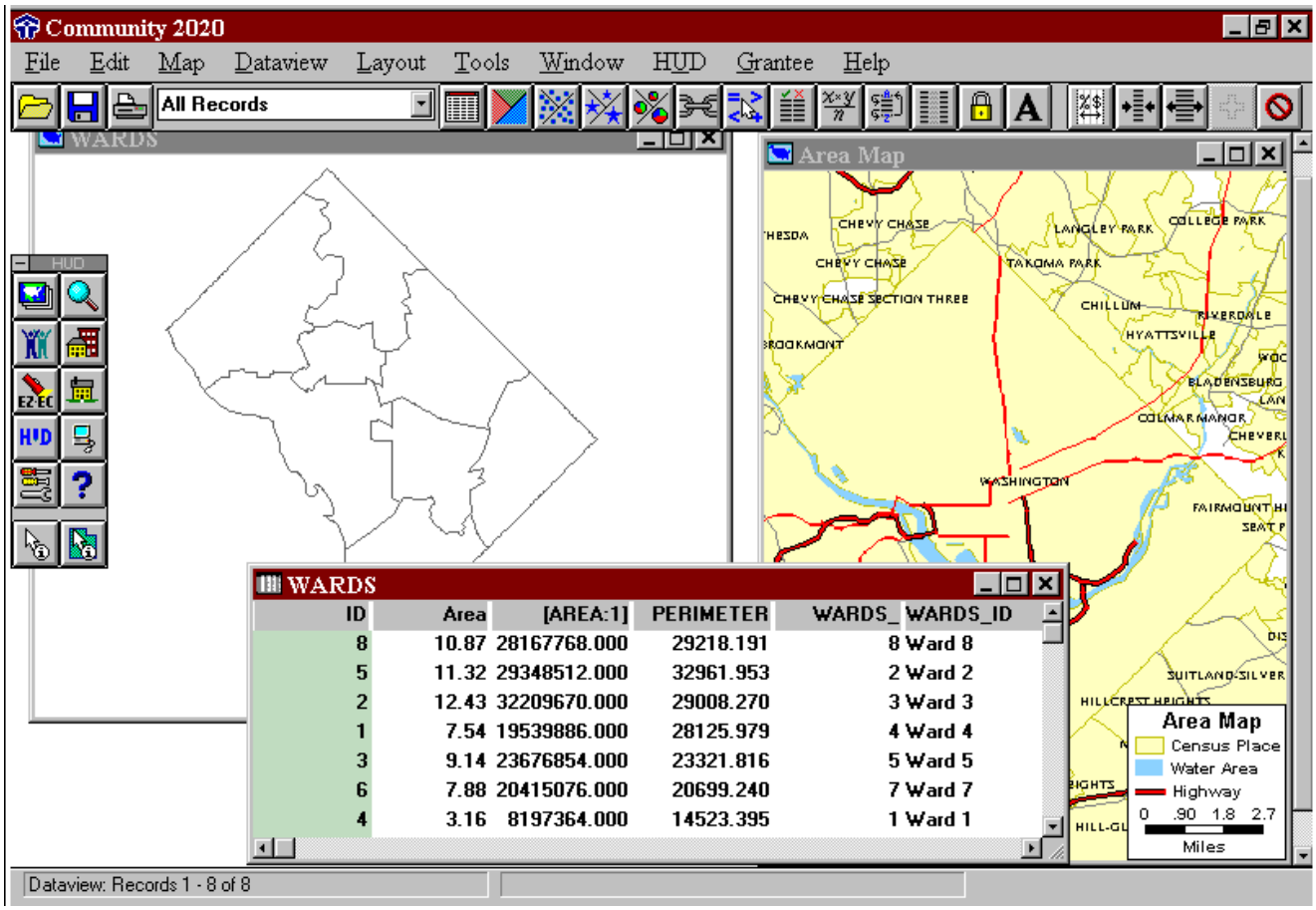
Once you have adjusted the coordinate system, you can click okay, and Community 2020 software will convert the Shape file to one based on longitude and latitude. The final steps look like the screen below.



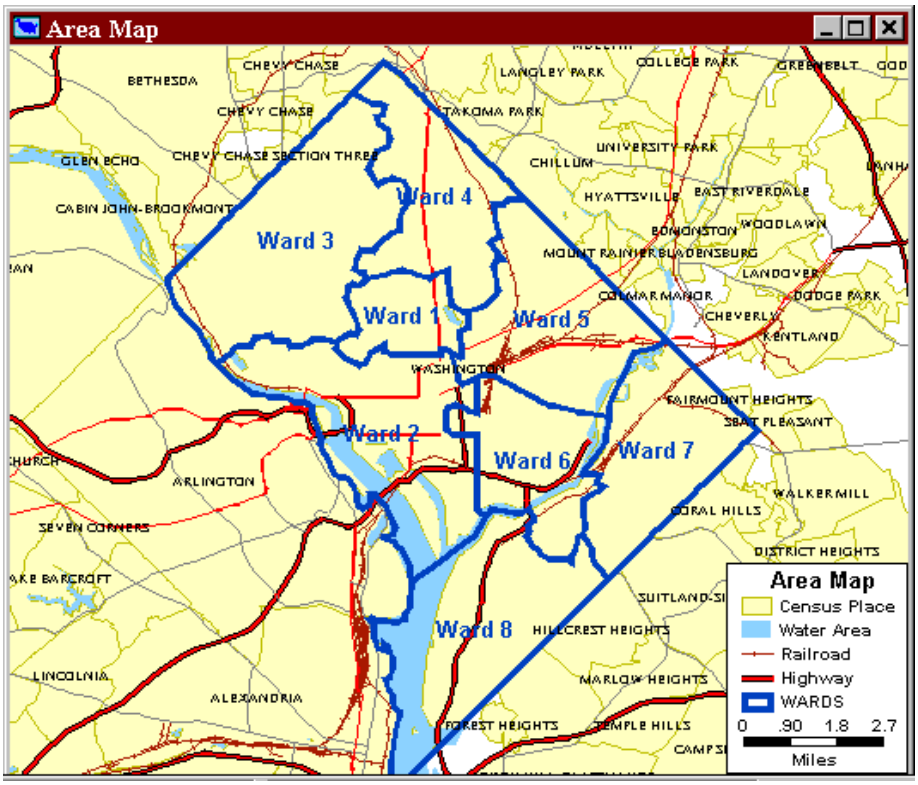
Community 2020 software will then ask you where you want to save the Standard Geographic File (*.dbd) to which it will convert the Shape file.



Now you will have a Standard Geographic File which you can add as a layer to any map of the same area. Because it is a Standard Geographic File it has all the associated data, can be edited, and the attributes of borders, color, and fill can be changed to suit your map.



There are eight political wards in the District of Columbia and the Shape file has been converted to a Caliper Standard Geographic File (*.dbd). A table has been created with the ward numbers identified and a Ward_ID text field to use as labels in you layer. Shown below is a Community 2020 software Area Map with the District of Columbia political ward boundaries added.



This completes an overview of how to import ArcView Shape Files into Community 2020 software. Once you have done so, you may use all the other features of Community 2020. HUD's software will export layers into ArcView Shape Files, which can then be used in ArcView to create "Views" and "Themes." The same considerations apply about the matching of geography and coordinate systems. This process will be described in a later Technical Bulletin.

The following book is a basic guide to data types and GIS systems: Pat Hohl, ed., GIS Data Conversion: Stategies, Techniques, and Management, Sante Fe, NM: OnWord Press, 1998